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Hsu

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(54) **ELECTRICAL SOCKET**

(75) Inventor: **Hsiu-Yuan Hsu**, Tu-cheng (TW)

(73) Assignee: **Hon Hai Precision Ind. Co., Ltd**, Taipei Hsien (TW)

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(51) **Int. Cl.**
H01R 13/62 (2006.01)

(52) **U.S. Cl.** **439/331**; 439/73; 439/342

(58) **Field of Classification Search** 439/342, 439/330–331, 70–71, 266, 73
See application file for complete search history.

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Primary Examiner—Michael C. Zarroli
(74) *Attorney, Agent, or Firm*—Wei Te Chung

(57) **ABSTRACT**

An IC socket includes a socket body (**10**), a plurality of contacts received in the socket body, a first press cover (**12**) pivotally mounted at one end of the socket body, and a second press cover (**14**) pivotally mounted at an opposite free end of the first press cover. The second press cover includes a pair of legs (**148**) extending from two sides of the end mounted onto the first press cover. A lever (**20**) is defined at corresponding end of the socket body, and two ends of the lever extend out of two sides of the socket body. Said extending out ends are corresponding to the legs, and each end defines a rigid sleeve (**60**) therearound. When the first press cover and the second press cover are rotated to a horizontal close position, the legs will engage with the sleeve rather than engage with the lever directly.

8 Claims, 7 Drawing Sheets

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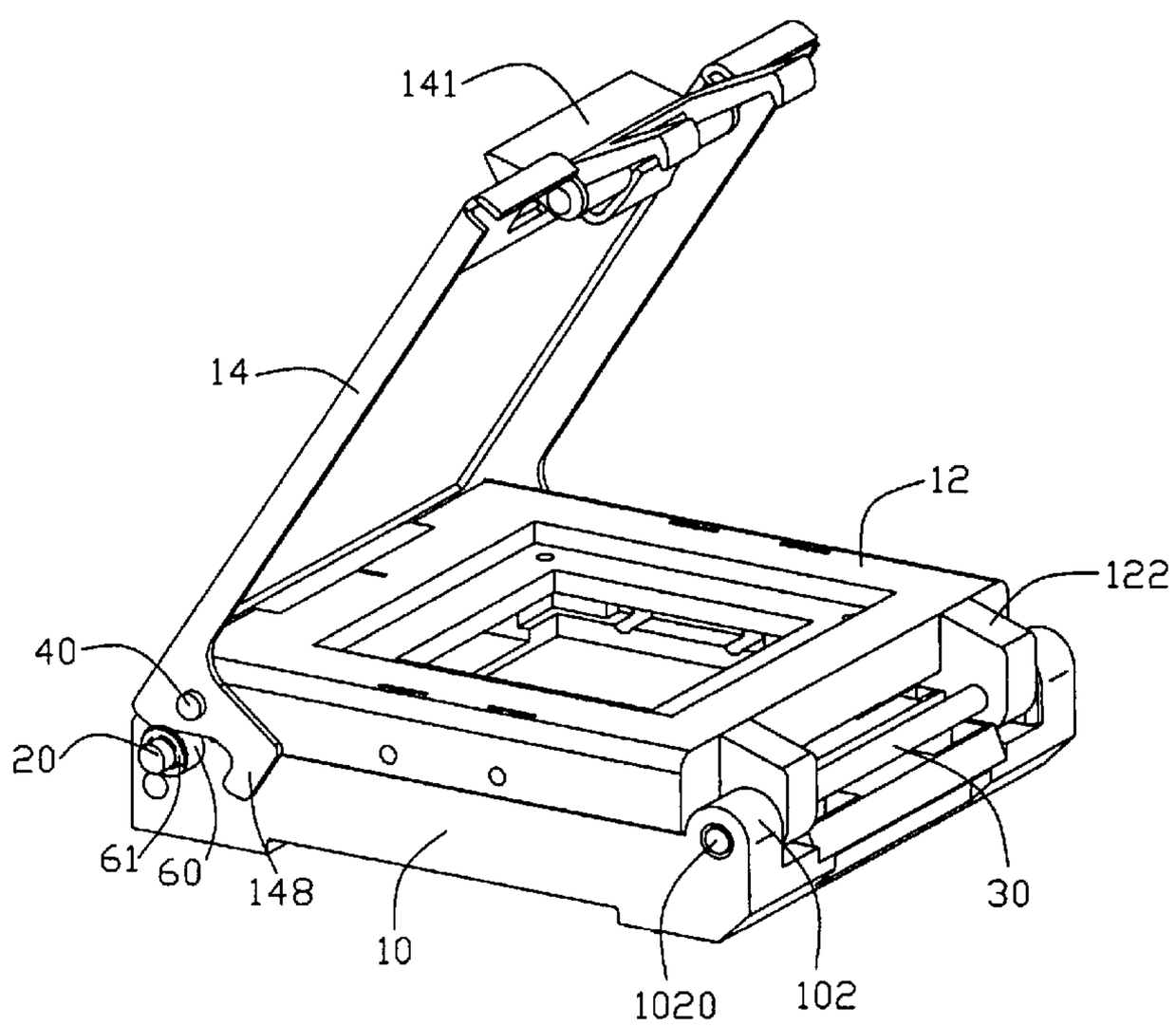

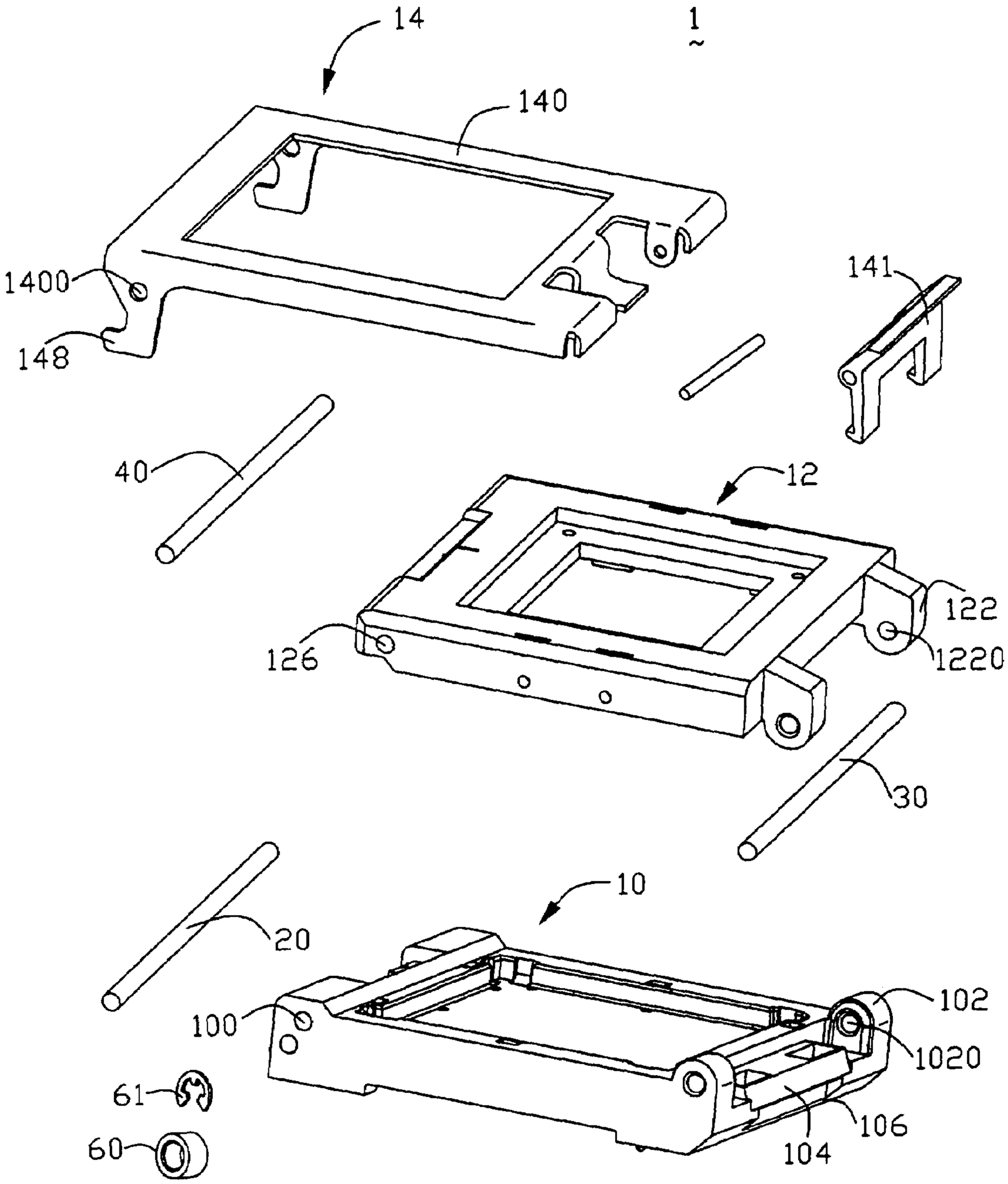
14
1
140
1400
148
141
40
12
126
122
1220
30
10
20
100
102
1020
61
106
60
104

FIG. 1

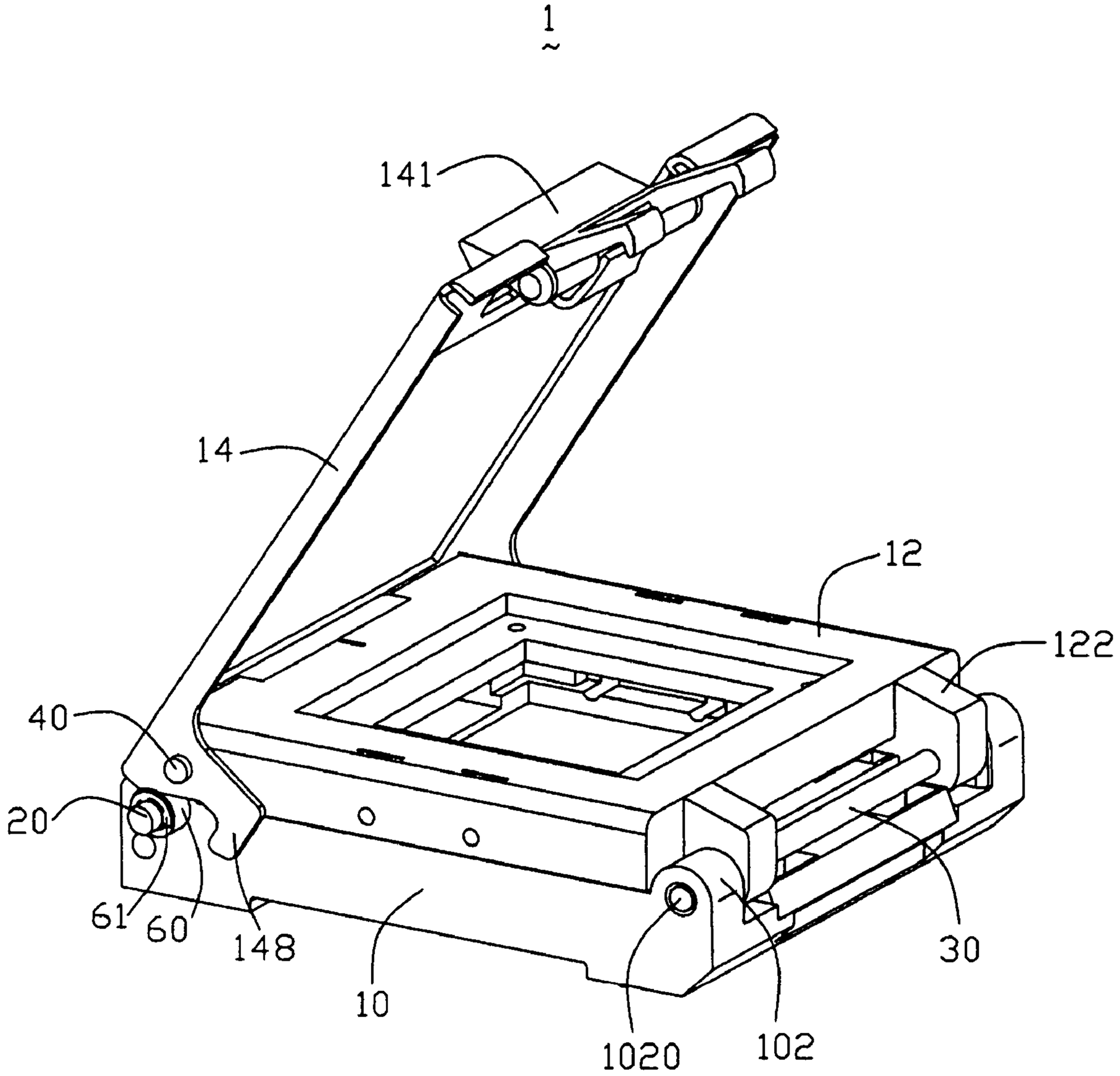

FIG. 2

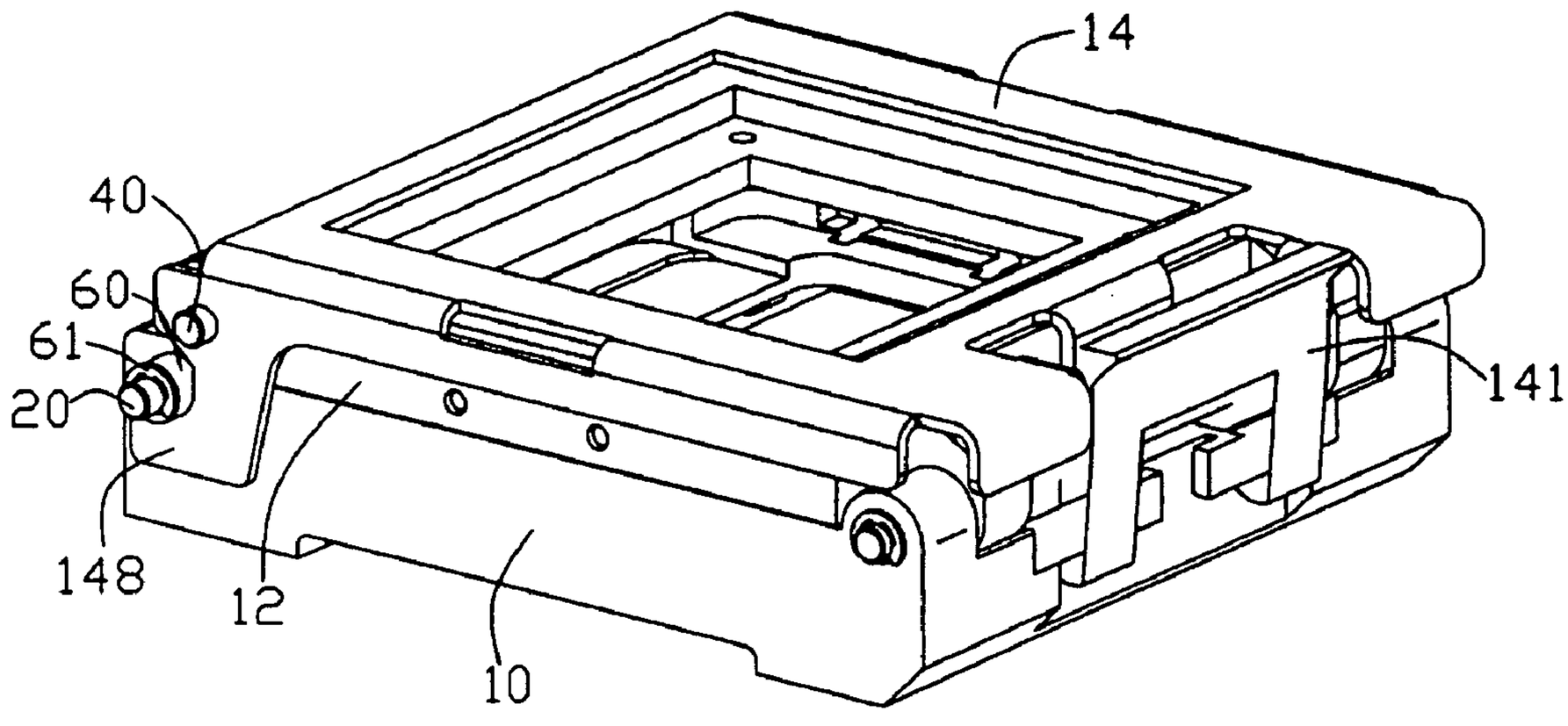

FIG. 3

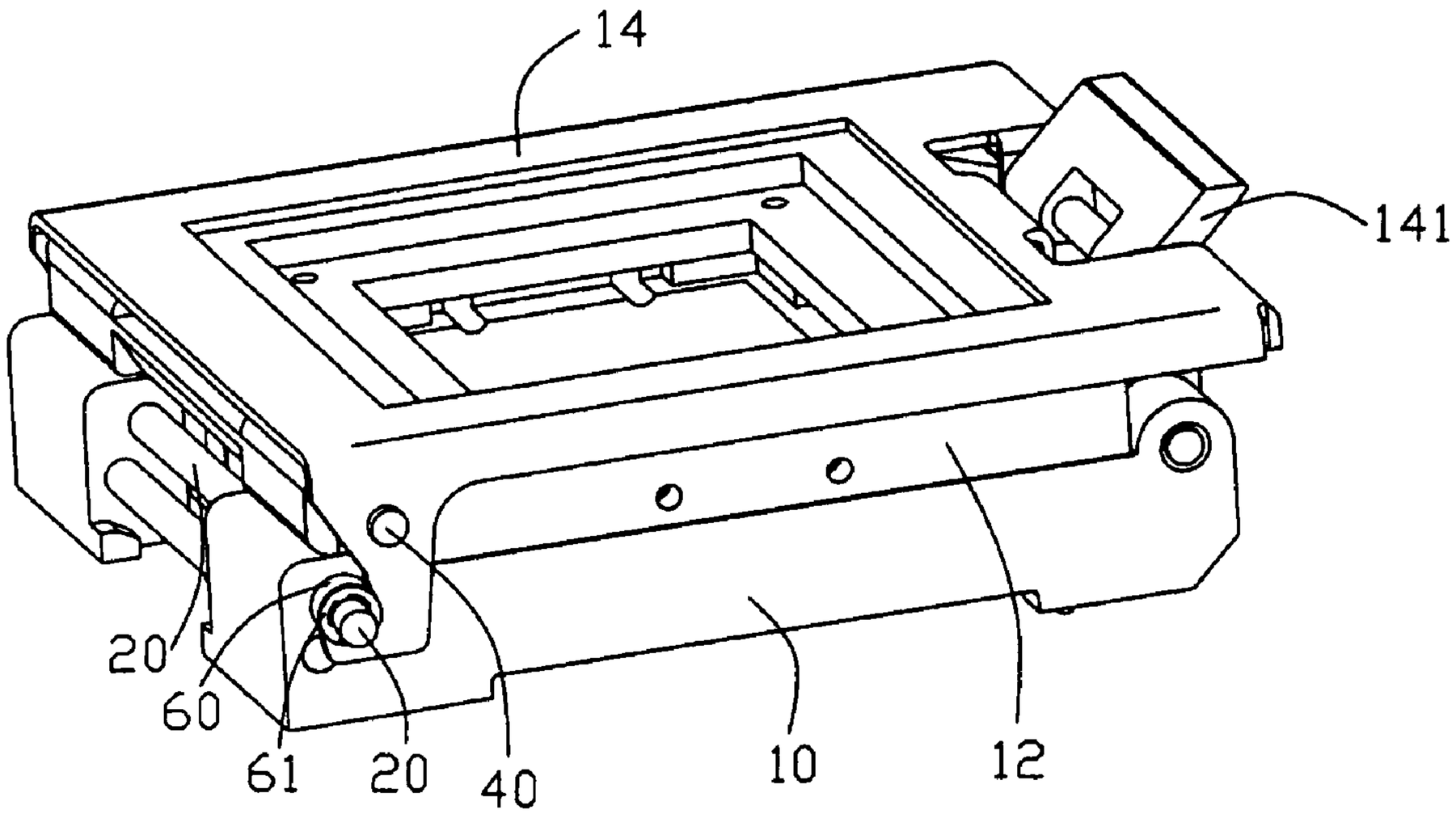

FIG. 4

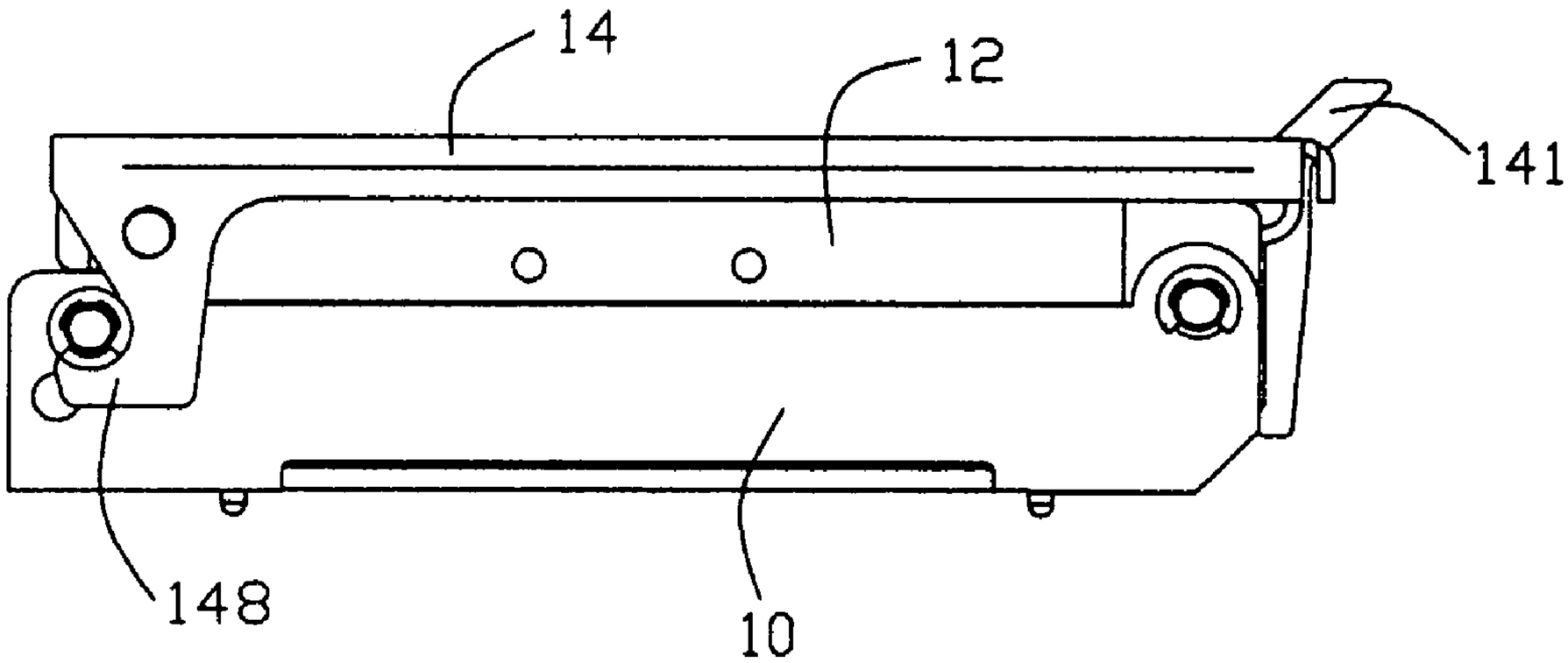

FIG. 5

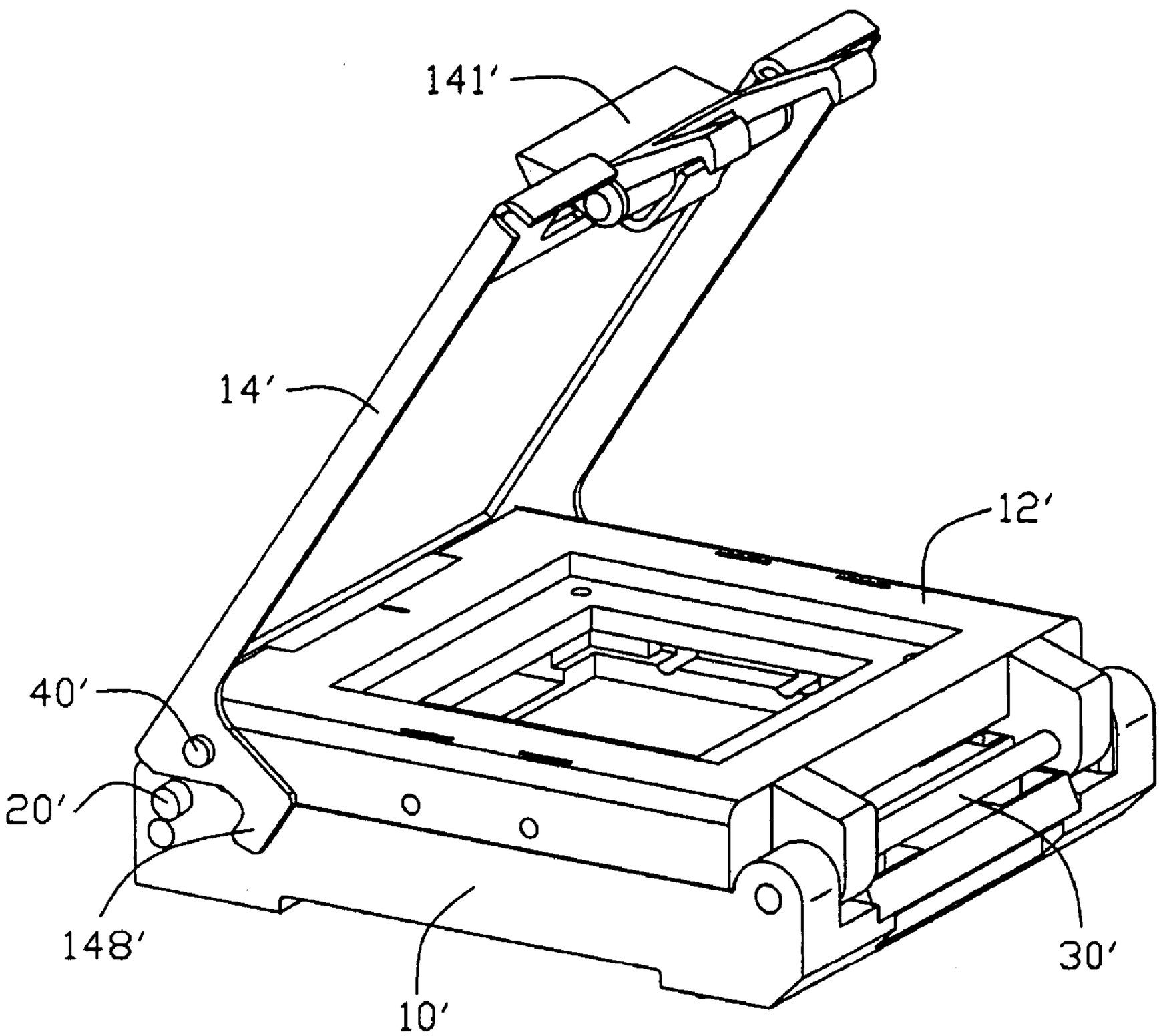

FIG. 6
(The Related Art)

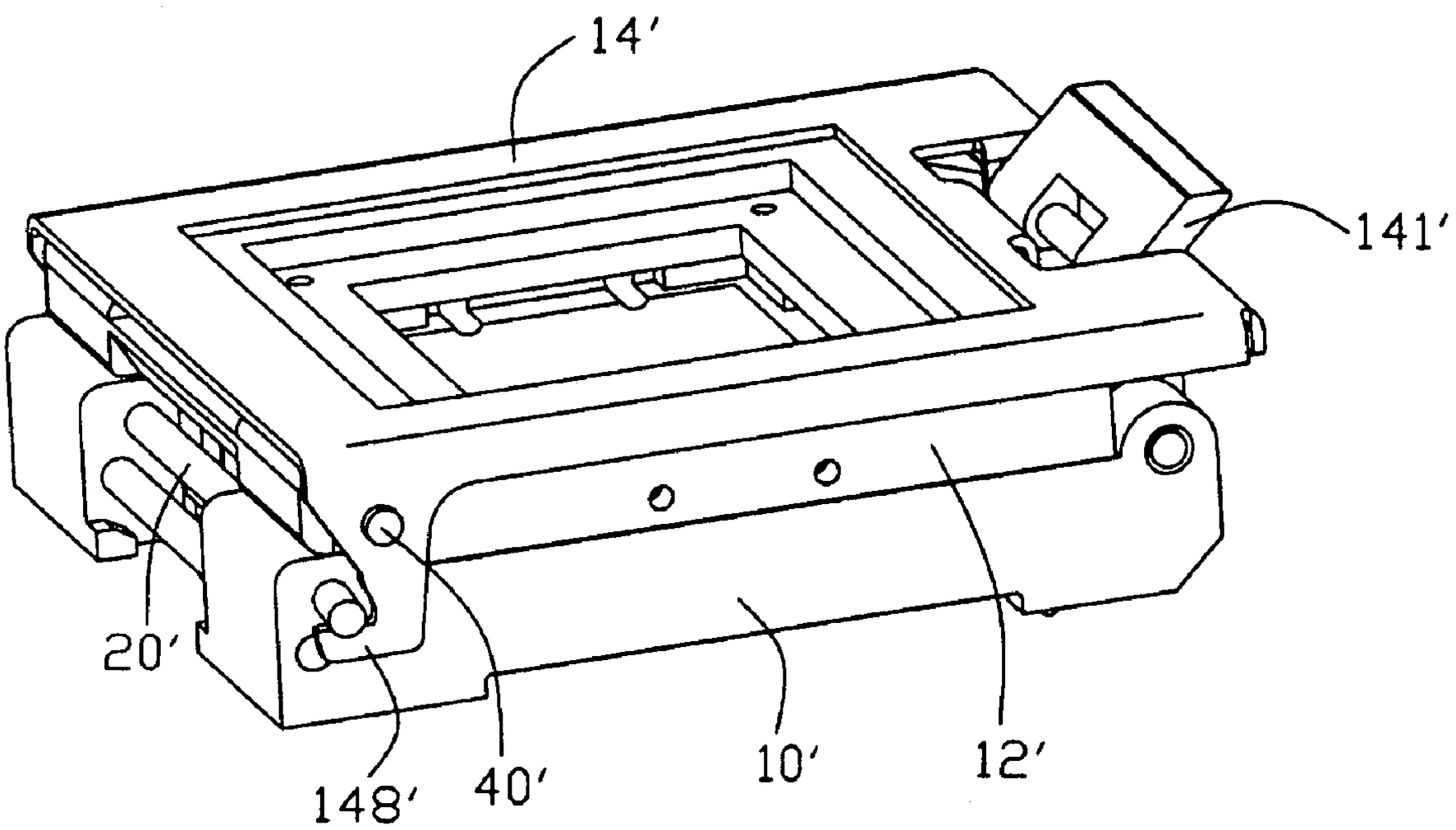

FIG. 7
(The Related Art)

ELECTRICAL SOCKET

Cross-Reference to related application Ser. No. 11/324,618, filed Jan. 3, 2006.

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to electrical connectors, and more particularly to electrical sockets for holding IC packages.

A conventional electric socket **1'** for testing an IC package is shown in FIG. **6** and FIG. **7**. The electrical socket **1'** includes a socket body **10'**, a plurality of contacts (not shown) received in the socket body **10'**, a first press cover **12'** pivotally mounted at one end of the socket body, and a second press cover **14'** pivotally mounted at an opposite free end of the first press cover **12'**.

The first press cover **12'** is pivotally mounted to the socket body via a first pivot **30'** at one end thereof, and a second pivot **40'** extending through an opposite end of the first cover **12'** for pivotally mounting the second press cover **14'**. The second press cover **14'** includes a pair of legs **148** extending from two sides of the end mounted onto the first press cover **12'**. A lever **20'** extends through the socket body **10**, and two ends of the lever **20'** extend out of two sides of the socket body. The extending two ends of the lever **20'** engage with said legs **148** of the second press cover **14'**, therefore fixing the first press cover **12'** onto the socket body **10'**. Furthermore, a locking member **141'** is defined at another end of the second press cover **14'** for locking the second press cover onto the socket body.

In use, the first press cover **12'** is first rotated to a vertical open position, and an IC package is placed in a receiving room of the socket body **10'**. Then the first press cover **12'** and the second press cover **14'** are rotated to a horizontal close position, and the second press cover **14'** fitly lies on the first press cover **12'**. At this time, the legs **148'** of the second press cover **14'** engage with the extending out two ends of the lever **20**, and the first press cover **12'** is therefore firmly mounted onto the socket body **10'**. When the locking member **141'** is locked onto the socket body **10'**, the second press cover **14'** is also fastened. Therefore, the IC package is steadily clasped in the receiving room of the socket body **10'**, and high temperature testing can be performed.

After the testing, the locking member **141'** is released, and the second press cover **14'** is rotated to a vertical position. With rotation of the second press cover **14'**, the legs **148'** disengage with the extending out ends of the lever **20'** gradually, and the first press cover **12'** is also released. Then the IC package is dismounted from the receiving room of the socket body **10'**, and another IC package can be placed into the receiving room for testing.

Such testing may be repeated many times for testing different electrical sockets, and the legs **148'** will engage and disengage with the extending out ends of the lever **20'** many times. One problem of this electrical socket is that the extending out ends of the lever **20'** are readily damaged or abraded for many times of engagement and disengagement between the legs **148'** and said ends of the lever **20'**.

Therefore, it is desired to provide a new electrical socket which overcomes the above-mentioned disadvantage.

Accordingly, an object of the present invention is to provide an electrical socket that can protect the lever from being friction damaged, therefore reducing maintaining cost of the electrical socket.

To achieve the above-mentioned object, the electrical socket includes a socket body, a plurality of contacts received in the socket body, a first press cover pivotally mounted at one end of the socket body, and a second press cover pivotally mounted at an opposite free end of the first press cover. The second press cover includes a pair of legs extending from two sides of the end mounted onto the first press cover. A lever is defined at corresponding end of the socket body, and two ends of the lever extend out of two sides of the socket body. Said extending out ends are corresponding to the legs, and each end defines a rigid sleeve therearound. When the first press cover and the second press cover are rotated to a horizontal close position, the legs will engage with the rigid sleeve rather than engage with the lever directly. Therefore, the lever is protected, and the sleeve is easy to be replaced even if it is friction damaged.

FIG. **1** is an exploded, isometric view of an electrical socket according to a preferred embodiment of the present invention;

FIG. **2** is an assembled, isometric view of the electrical socket of FIG. **1**, showing the first press cover at a close position and the second press cover at an open position;

FIG. **3** is an assembled, isometric view of the electrical socket of FIG. **1**, showing the IC socket at a closed position;

FIG. **4** is an isometric view of the electrical socket of FIG. **3**, but viewed from another aspect thereof;

FIG. **5** is a side, plan view of the electrical socket of FIG. **4**;

FIG. **6** is an isometric view of a conventional electrical socket, showing the first press cover at a close position and the second press cover at an open position; and

FIG. **7** is an isometric view of the electrical socket of FIG. **6**, but showing the IC socket at a closed position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

Reference will now be made to the drawings to describe the present invention in detail.

Referring to FIGS. **1–5**, the electrical socket **1** includes a socket body **10**, a plurality of contacts (not shown) received in the socket body **10**, a first press cover **12** pivotally mounted at one end of the socket body, and a second press cover **14** pivotally mounted at an opposite free end of the first press cover **12**.

The socket body **10** is substantially of a rectangular configuration, and it defines a receiving room for receiving an IC package therein. A pair of spaced ribs **102** is arranged on one end of the socket body **10**, with a longitudinally extending hole **1020** formed in each of the ribs **102**. A protrusion **104** is formed between said two ribs **102**, and a latch portion **106** is defined at middle of the protrusion **104**. In the preferred embodiment, the latch portion **106** is a recess under the protrusion **104**. The socket body **10** defines a pair of lever holes **100** at the opposite ends thereof for receiving a lever **20** extending therethrough, and each end of the lever **20** extends beyond corresponding sides of the socket body **10**. Each extending out end defines a rigid sleeve **60** therearound and a blocking ring **61** abuts against the rigid sleeve **60** for preventing the sleeve **60** falling off from the lever **20**. Said rigid sleeve **60** is preferably made from rigid metal or rigid plastic.

The first press cover **12** has a substantially rectangular configuration with a center window thereof. The first press cover **12** defines a pair of ears **122** corresponding to the ribs **102** of the socket body **10**, and each ear **122** defines a first

pivot hole **1220**. A first pivot **30** extends through the pivot holes **1220** and corresponding extending holes **1020** of the ribs **102**, and the first press cover **12** is therefore pivotally mounted to the socket body **10**. A pair of second pivot holes **126** is defined at the opposite free end of the first press cover **12**.

The second press cover **14** includes a rectangular frame **140** with downwardly extending side walls. A pair of third pivot holes **1400** is defined at one end of the side walls of the frame, and a locking member **141** is pivotally attached to the opposite end of the frame **140**. A pair of legs **148** extends downwardly from said ends having pivot holes **1400**, for engaging with the extending out ends of the lever **20**. A second pivot **40** extends through the third pivot holes **1400** and the second pivot holes **126**, and the second press cover **14** is therefore pivotally mounted to the first press cover **12**.

In use, the first press cover **12** is first rotated to a vertical open position, and an IC package is placed in a receiving room of the socket body **10**. Then the first press cover **12** and the second press cover **14** are rotated to a horizontal close position, and the second press cover **14** fitly lies on the first press cover **12**. At this time, the legs **148** of the second press cover **14** engage with the rigid sleeve **60** around the extending out two ends of the lever **20**, and the first press cover **12** is therefore firmly mounted onto the socket body **10**. When the locking member **141** is locked onto latch portion **106** of the socket body **10**, the second press cover **14** is also fastened. Therefore, the IC package is steadily clasped in the receiving room of the socket body **10**, and high temperature testing can be performed.

After the testing, the locking member **141** is released from the latch portion **106**, and the second press cover **14** is rotated to a vertical position. With rotation of the second press cover **14**, the legs **148** disengage with the rigid sleeve **60** of the extending out ends of the lever **20** gradually, and the first press cover **12** is also released. Then the IC package is dismounted from the receiving room of the socket body **10**, and another IC package can be placed into the receiving room for testing.

Because two ends of the lever **20** corresponding to the legs **148** are protected by the rigid sleeve **60** therearound, the lever **20** will not be friction damaged during said engagement and disengagement. Even if the rigid sleeve **60** is damaged, it is easy to be dismounted and replaced. Therefore, maintaining cost of the IC socket is reduced.

While preferred embodiment in accordance with the present invention has been shown and described, equivalent modifications and changes known to persons skilled in the art according to the spirit of the present invention are considered within the scope of the present invention as defined in the appended claims.

What is claimed is:

1. An electrical connector for interconnecting an IC package and a circuit substrate, the electrical connector comprising:

a socket body adapted to accommodate the IC package therein, the socket including side walls extending along edges of the body, and having a latch arranged thereon;

a plurality of contacts arranged in the socket body;

a lever arranged to the socket body and having ends of the lever extending beyond the socket body;

a first press cover with one end pivotally mounted at a first end of the socket body;

a second press cover with one end attached to a free end of the first press cover, and a second end having a locking member, wherein the one end mounted to the free end of the first press cover including a leg corresponding to the ends of the lever extending beyond the socket body;

wherein the ends of the lever extending beyond the socket body each includes a rigid sleeve therearound, and interengaged with the leg when the first press cover and second cover are rotated to a horizontal position.

2. The electrical connector as claimed in claim **1**, wherein a blocking ring abuts against the sleeve for preventing the sleeve falling off from the lever.

3. The electrical connector as claimed in claim **2**, wherein the latch portion is a recess.

4. The electrical connector as claimed in claim **3**, wherein the first press cover is pivotally mounted to the socket body via a first pivot.

5. The electrical socket as claimed in claim **4**, wherein the second press cover is pivotally mounted to the socket body via a second pivot.

6. The electrical socket as claimed in claim **5**, wherein the rigid sleeve is made from rigid metal or rigid plastic.

7. The electrical socket for interconnecting an IC package and a circuit substrate, the electrical socket comprising:

a socket body adapted to accommodate an IC package, a lever located at a first end of the socket body and extending outwardly beyond a corresponding side wall in a transverse direction, a latch portion being formed at a second end of the socket body opposite to said first end in a lengthwise direction opposite to the transverse direction;

a plurality of contacts received in the socket body;

a first press cover with a third end pivotally mounted at said second end of the socket body;

a second press cover with a fourth end pivotally mounted at a fifth end of the first press cover which is opposite to the third end of said first press cover and with a sixth end being opposite to the fourth end and including a locking member adapted to be locked to the latch portion, the fourth end of said second press cover including at least one leg corresponding to the lever and curved in plane perpendicular to said transverse direction;

wherein the lever is surrounded by a rigid sleeve and the leg is compliantly configured to engage with said rigid sleeve without interference when the locking member is latched to the latch portion.

8. The socket as claimed in claim **7**, wherein a radius of said sleeve is dimensionally larger than that of a pivot formed by the second end and the third end or by the fourth end and the fifth end.

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